

IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A semiconductor structure comprising:

a monocrystalline substrate;

an amorphous oxide material in contact with the monocrystalline substrate;

a monocrystalline metal oxide selected from the group consisting of alkaline earth metal titanates, alkaline earth metal zirconates, alkaline earth metal hafnates, alkaline earth metal tantalates, alkaline earth metal ruthenates, alkaline earth metal niobates, alkaline earth metal vanadates, alkaline earth metal tin-based perovskites, lanthanum aluminate, lanthanum scandium oxide, gadolinium oxide and mixtures thereof contacting the amorphous oxide material;

~~a buffer layer formed on the substrate;~~

a template formed overlying the metal oxide ~~on the buffer layer~~; and

a monocrystalline material layer formed overlying the template

wherein the template layer comprises a Zintl type phase material comprising at least one of SrAl_2 , $(\text{MgCaYb})\text{Ga}_2$, $(\text{Ca,Sr,Eu,Yb})\text{In}_2$, BaGe_2As , and SrSn_2As_2 .

2. Cancelled.

3. Cancelled.

4. (Currently Amended) A semiconductor structure comprising:

a monocrystalline substrate;

an amorphous oxide material in contact with the monocrystalline substrate;

a monocrystalline metal oxide selected from the group consisting of alkaline earth metal titanates, alkaline earth metal zirconates, alkaline earth metal hafnates, alkaline earth metal tantalates, alkaline earth metal ruthenates, alkaline earth metal

niobates, alkaline earth metal vanadates, alkaline earth metal tin-based perovskites, lanthanum aluminate, lanthanum scandium oxide, gadolinium oxide and mixtures thereof contacting the amorphous oxide material;

~~a buffer layer formed on the substrate;~~

a template formed overlying the metal oxide ~~on the buffer layer;~~ and

a monocrystalline material layer formed overlying the template wherein the ~~buffer~~ metal oxide layer comprises $\text{Sr}_z\text{Ba}_{1-z}\text{TiO}_3$ where z ranges from 0 to 1, the template comprises SrAl_2 , and the monocrystalline material layer comprises GaAs.

5. (Previously Presented) The semiconductor structure of claim 1 wherein the template layer further comprises a surfactant material.

6. (Original) The semiconductor structure of claim 5 wherein the surfactant comprises at least one of Al, In, and Ga.

7. (Original) The semiconductor structure of claim 5 wherein the template layer further comprises a capping layer.

8. (Original) The semiconductor structure of claim 7 wherein the capping layer is formed by exposing the surfactant material to a cap inducing material.

9. (Currently Amended) The semiconductor structure of claim 7 wherein the ~~cap inducing material~~ capping layer comprises at least one of As, P, Sb, and N.

10. (Original) The semiconductor structure of claim 7 wherein the surfactant comprises Al, the capping layer comprises Al_2Sr , and the monocrystalline material layer comprises GaAs.

Claims 11 – 15 (Cancelled).

16. (Currently Amended) The semiconductor structure of claim 1 wherein the ~~buffer layer~~ metal oxide comprises $\text{Sr}_x\text{Ba}_{1-x}\text{TiO}_3$ where x ranges from 0 to 1.

17. (Currently Amended) The semiconductor structure of claim 1 wherein the ~~buffer layer comprises an~~ amorphous oxide is formed as a monocrystalline oxide and subsequently heat treated to convert the monocrystalline oxide to an amorphous oxide.

18. (Currently Amended) The semiconductor structure of claim 17 wherein the monocrystalline ~~Group IV~~ substrate is characterized by a first lattice constant and the monocrystalline material layer is characterized by a second lattice constant different than the first lattice constant.

19. (Cancelled)

20. (Currently Amended) The semiconductor structure of claim 17 wherein the monocrystalline ~~Group IV~~ substrate is characterized by a first crystalline orientation and the monocrystalline oxide is characterized by a second crystalline orientation and wherein the second crystalline orientation is rotated with respect to the first crystalline orientation.

21. (Cancelled)

22. (Currently Amended) The semiconductor structure of claim ~~21~~ 1 wherein the ~~Group IV~~ substrate comprises silicon and the ~~second~~ amorphous oxide ~~layer~~ material comprises a silicon oxide.

23. (Original) The semiconductor structure of claim 1 wherein the monocrystalline material layer comprises at least one of a semiconductor material, a compound semiconductor material, a metal, and a non-metal.

24. (Original) The semiconductor structure of claim 1 wherein the monocrystalline material layer is a compound semiconductor material selected from the group consisting of III-V compounds, mixed III-V compounds, II-VI compounds, and mixed II-VI compounds.

25. (Original) The semiconductor structure of claim 1 wherein the monocrystalline material layer comprises a material selected from the group consisting of GaAs, AlGaAs, InP, InGaAs, InGaP, ZnSe, and ZnSeS.

26. (Cancelled)

27. (Currently Amended) The semiconductor structure of claim 25 wherein the amorphous oxide ~~layer~~ has a thickness of about 5 - 6 nm.

28. (Original) The semiconductor structure of claim 1 wherein the monocrystalline material layer comprises a semiconductor or a compound semiconductor.

29. (Currently Amended) The semiconductor structure of claim 1, ~~further~~ comprising an amorphous silicon oxide layer formed between the substrate and said ~~buffer~~ metal oxide, wherein said ~~buffer~~ metal oxide is a perovskite oxide.

30. (Currently Amended) The semiconductor structure of claim 4, ~~further~~ comprising an amorphous silicon oxide layer formed between the substrate and said ~~buffer~~ metal oxide, wherein said ~~buffer~~ metal oxide is a perovskite oxide.